Before the

Energy Tax Reform Working Group

Committee on Ways and Means

United States House of Representatives

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Comments of FreedomWorks Foundation

In Regards to the Wind Production Tax Credit (PTC)

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1. Wind Subsidies are Spinning Out of Control

Since the early 1990s, the federal government has buttressed the wind energy industry through a series of programs and subsidies. The flagship program has been the Wind Production Tax Credit (PTC). This program provided a subsidy of 2.2 cents for every kilowatt-hour produced by wind utilities.

This figure may not trigger any sticker shock, but over time the price tag has steadily added up. Roughly $20 billion has already been spent via the PTC and another $10 billion in future spending is already committed. The skyrocketing price is the result of multiple extensions of the program. The original PTC had a built-in expiration date that lapsed in 1999; however, it has managed to survive through eight separate extensions by Congress. The latest extension, included in the 'Fiscal Cliff' deal struck in early January, has raised significant concern as budget scoring projects it pledges another $12 billion[1] in addition to the $30 billion that has already been committed or spent.

Now, with the taxpayer already committed for $42 billion, the IRS has just announced it will boost the 2.2 cent subsidy to 2.3 cents. This rate increase is estimated to cost the taxpayer an additional $545 million.[2]

To make matters worse, the Government Accountability Office issued a report[3] last month revealing that the federal government operates a total of 82 separate wind industry related programs across over a half-dozen agencies that collectively cost taxpayers $2.9 billion each year. The report also found that a majority of the programs are redundant. Sixty-eight of the 82 programs overlapped with each other in some form in one of the more recent and striking examples of the sheer extent of government waste.

The fact of the matter is that spending on the wind industry is spinning out of control. Further exacerbating the situation is the fact that all this investment has produced negligible, if not negative, results.

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[1] AEA, *New Study Finds Federal Wind Production Tax Credit (PTC) No Longer Needed to Drive Wind Generation Development*, October 31, 2012. http://www.americanenergyalliance.org/2012/10/aea-study-removing-big-winds-training-wheels/

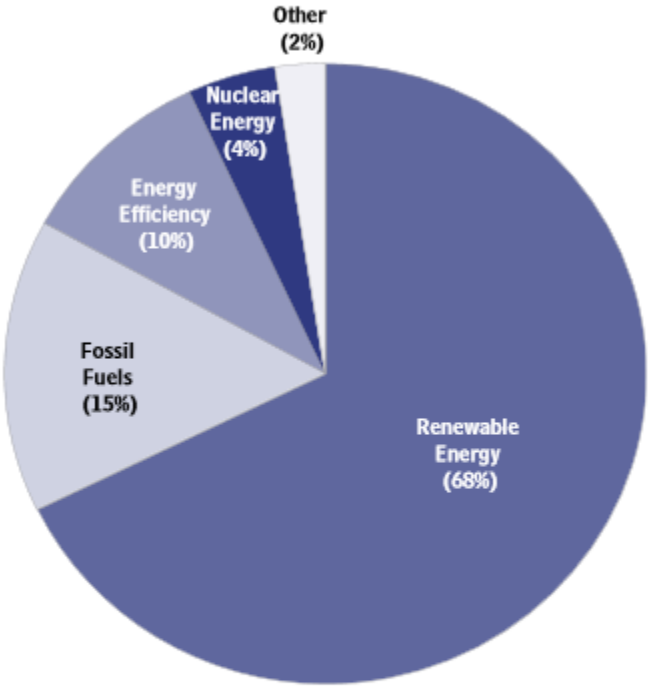
[2] *Overlapping wind energy initiatives spark claims of waste, as IRS increases tax credit,* FoxNews.com, April 08, 2013. http://www.foxnews.com/politics/2013/04/08/government-report-finds-taxpayer-money-getting-blown-away-by-wind/

[3] GAO, *Wind Energy: Additional Actions Could Help Ensure Effective Use of Federal Financial Support*, Report to Congressional Requesters, March 2013. http://www.gao.gov/assets/660/652957.pdf

Currently, subsidization of renewable energy dominates government energy investment, accounting for 68 percent[4] of all federal energy-related tax subsidies.

Allocation of Energy-Related Tax Preferences in Fiscal Year 2011, by Type of Fuel or Technology

(Percent)



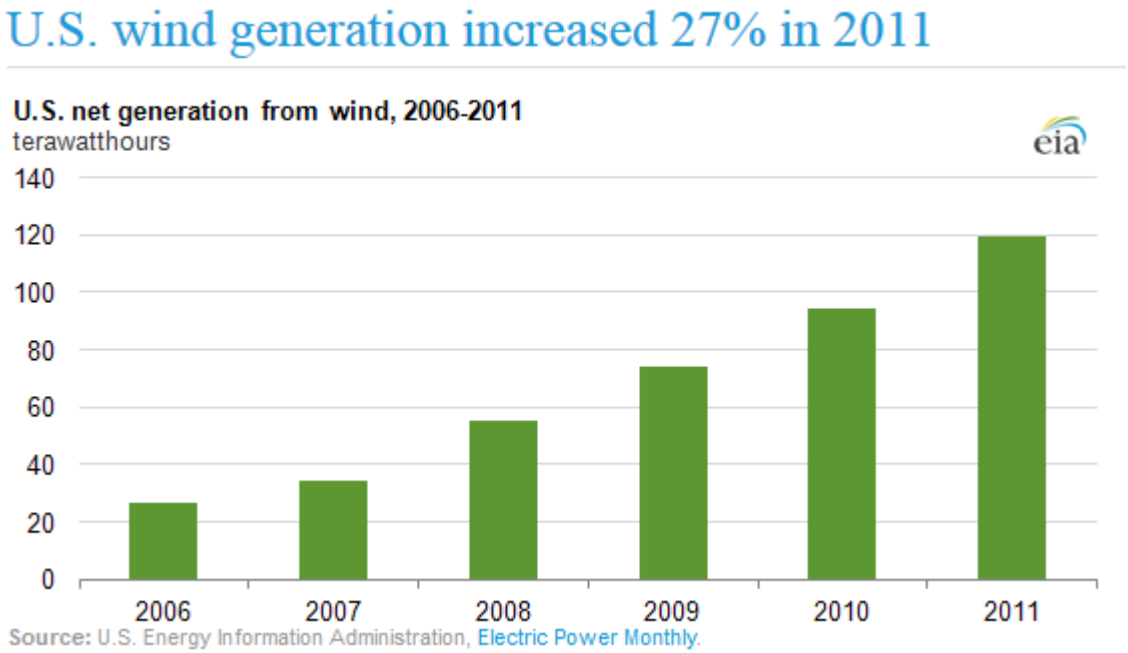
Source: Congressional Budget Office based on data from Joint Committee on Taxation, *Estimates of Federal Tax Expenditures for Fiscal Years 2011–2015* (January 17, 2012); and Office of Management and Budget, *Budget of the U.S. Government, Fiscal Year 2013: Appendix* (February 2012), p. 1068.

Notes: This figure encompasses all of the tax preferences listed in Table 1, including those listed as "other." The cost of those other income tax preferences included $1 billion for renewable energy, $600 million for energy efficiency, $600 million for fossil fuels, and $500 million that was unallocated.

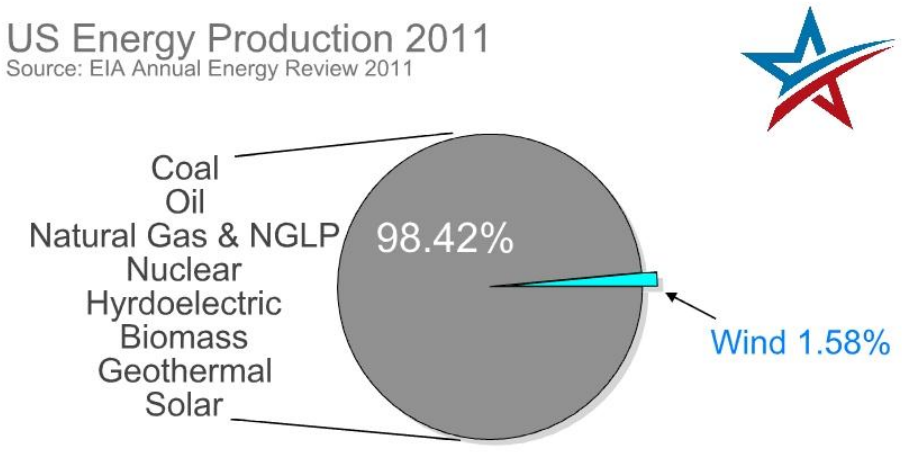
Numbers do not add up to 100 percent because of rounding.

[4] Terry Dinan and Philip Webre, Federal Financial Support for the Development and Production of Fuels and Energy Technologies, CBO Issue Brief, March 2012. http://www.cbo.gov/sites/default/files/cbofiles/attachments/03-06-FuelsandEnergy_Brief.pdf

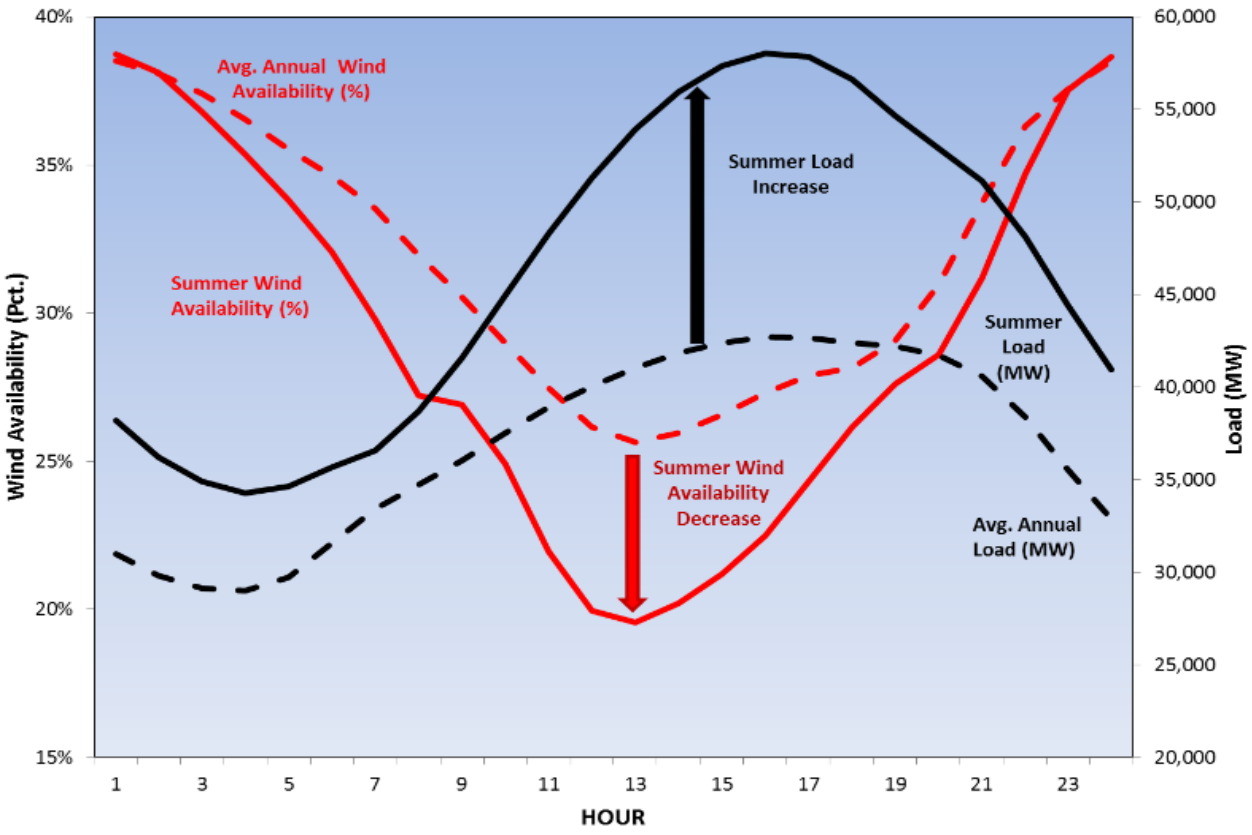
Without doubt, decades of heavy investment like this have resulted in exponential growth in the generation capacity of domestic wind power.



However, when examining wind's impact on the electric grid as a whole, the growth in this individual sector doesn't translate to increased grid capacity overall. Billions of dollars have been spent and wind power creates next to none of the energy demanded by the U.S. grid. In 2011, wind accounted for less than 2 percent of all energy produced in the U.S.



Adding insult to injury, it is important to remember that since wind energy is dependent on weather patterns, there are significant issues with wind power supply versus demand on the energy grid. The little amount of wind power that is created happens to be primarily produced during times and weather conditions almost exactly inverse to peak power demand.



2009-12, Summer and Annual Load and Wind Availability -ERCOT

Source: Dr. Jonathan A. Lesser, *Wind Intermittency and the Production Tax Credit, A High Subsidy for Low Value Power,* Continental Economics, Oct. 2012.
http://www.continentalecon.com/publications/cebp/Lesser_PTC_Report_Final_October-2012.pdf

This phenomenon is inconvenient to proponents of the wind industry, but the explanation is simple and should have been anticipated. On cool, breezy nights, people turn their lights and A/C units off. But it is during these conditions when the combination of dense air and windy conditions produce the greatest amount of lift on wind turbine blades, and hence produce the most power. It's essentially the opposite in the summer days, when people have their A/C units on full-blast to combat the hot and stagnant air conditions outside.

All these factors thus beg the question: Why does the government continue to grant billions of dollars to corporations to produce a diminutive amount of power and, further, produce it at precisely the times we demand power the least?

2. A Darker Shade of Green: The Environmental Consequences of Wind Energy

Wind energy has become an environmentalist's catchall. Americans have been led to believe that the big white wind turbines springing up all across the country are a sort of great white hope for the environment and energy security. The truth of the matter is that the production, usage, and maintenance of modern windmills is nowhere near as environmentally sound as those in the "green" movement would like everyone to believe. Even the federal government is guilty of perpetuating misinformation on wind power. Paying no attention to a severe amount of negative externalities that exist as a result of the surge in attention and investment paid to wind power, the Environmental Protection Agency states the following on their website:

Air Emissions: *Emissions associated with generating electricity from wind technology are negligible because no fuels are combusted.*

Water Resource Use & Water Discharges: *Wind turbines in areas with little rainfall may require the use of a small amount of water. If rainfall is not sufficient to keep the turbine blades clean, water is used to clean dirt and insects off the blades so that turbine performance is not reduced. Wind turbines do not discharge any water while creating electricity.*

Solid Waste Generation: *Wind technologies do not produce any substantial amount of solid waste while creating electricity.*

Land Resource Use: *Wind turbines generally require the use of land, although they may also be sited offshore. Land around wind turbines can be used for other purposes, such as the grazing of cattle or farming. When wind turbines are removed from land, there are no solid wastes or fuel residues left behind. However, large wind farms pose aesthetic concerns and wind turbines that are improperly installed or landscaped may create soil erosion problems. Wind farms can also have noise impacts, depending on the number of wind turbines on the farm. New blade designs are being used to reduce the amount of noise. Bird and bat mortality has been an issue at some wind farms. Improvements to wind turbine technologies and turbine siting have helped mitigate bird mortality. Research on impacts to bats is now underway.*

The truth is that wind power is not environmentally neutral, as the EPA would have you believe. Like all things, the use of wind power has its consequences. These consequences affect air emissions, water resources, solid waste generation, and land resource usage in addition to potentially catastrophic implications for the overall ecosystem. Since the EPA is marching on with massive new rules and regulations that will cripple efficient and economical energy production, two things that wind power is not; which is why the following is the darker shade of green they don't want you to see.

Air Emissions

It's not unreasonable to assume that windmills are air emissions neutral. How could something spinning in the wind possibly create any sort of air pollution? Well the problem lies in the solution. Wind is unreliable. Sometimes it blows and sometimes it doesn't. The problem this creates is power fluctuations. If sole power dependency for a town, city, or region was placed on a wind farm, rolling blackouts would be a regular occurrence, something only now seen in areas

of the third world. Allowing this to happen in the United States, sacrificing energy reliability, is outright not an option; therefore, to meet demand and account for the variation and intermittency of wind, other sources of power, independent of weather patterns, must be available. Geographic conditions prevent the ubiquity of hydro-electric power so, at some level, the use of wind power creates the need for fossil fuel based energy production. These additional facilities on a wind powered grid are called balancing facilities.

Another common belief is that if wind and fossil fuel balancing facilities are supplementing one another in powering the grid, then fossil fuel emissions should come down. This has proved not to be the case. Fossil fuel plants, like coal fired facilities, operate most efficiently and cleanly at a steady operation level near the rated output of the plant. When performing the balancing activities to compensate for the windmills, plants have been found to burn less than 2 percent less fuel and produce nearly identical levels of air pollution than they would if operating on a constant cycle near the peak rating.[5] The situation is similar to fuel economy on an automobile. A car is less efficient and burns more fuel, resulting in more pollution, in the stop-and-go traffic of a big city as opposed to cruising at 55 miles per hour on the highway.

To stay competitive, the United States requires a reliable power grid; however, wind farms simply cannot produce the necessary even flow of power. This forces fossil fuel plants into a stop-and-go situation where they must work harder and burn more fuel to combat the unpredictability of the wind mills, creating more pollution than necessary to generate affordable and reliable power.

Water Resource Use & Land Resource Use

Wind mill blades are not only comparable to the size of large aircraft wings; they work a lot like them, too. The blades are giant airfoils that create the force of lift to spin the blade. This force of this lift can be weakened or even eliminated if the airflow is obstructed or there is too much weight on the foil. High winds, altitude, moisture and cold temperatures create a danger to aircraft because in these conditions ice can accumulate on the plane and either weigh the plane down, obstruct airflow over the wings, or freeze flaps, landing gear, or other critical moving parts in place. This often causes catastrophic failure of the entire machine. Windmills are subject to the same problems

[5] *Wind Power And CO2 Emissions* Willem Post, May 23, 2011The Energy Collective http://theenergycollective.com/willem-post/57905/wind-power-and-co2-emissions

Ice accumulation on a wind turbine.

In fact, over 65 percent of the windmills in the United States are in areas that icing is "possible and likely."[6] Airflow over the blades can be obstructed and the blades themselves can be weighed down by ice. The weight of the ice can also crack the blades causing irreversible damage. Destruction of other windmills and surrounding structures has also been reported from heavy ice chunks being thrown from spinning windmills.

The impact of ice stretches beyond the potential for physical damage to the windmill structure. The fact that icing is such a widespread problem has implications for both the reliability of wind energy and the health of the environment.

The threats that ice accretion poses forces measures at wind facilities that make even erecting a windmill seem pointless. The first obvious problem is that the weight of even the slightest accreted ice immediately begins to handicap the output of the windmill, making the force of the wind less effective in spinning the blades and turning the generator. If even more ice accumulates the mill has to be shut down to prevent damaging itself or other windmills or structures in the area. The greatest threat of ice accumulation happens to be at night and obviously during winter conditions. Shutting down a windmill after sunset is a major issue because most wind energy is typically generated at night. [7] Shutting down in winter conditions creates a hazardous situation because many people rely heavily on electricity to heat their homes and keep their vehicle engines warm. Ice buildup prevents operation at hours of peak wind activity and when people need the power to heat their homes. These, among other, factors have driven manufacturers and operators of windmills to develop measures to alleviate the ice

[6] *Detecting Ice on Wind-turbine Blades*
Nick Harper, July 21, 2011
Wind Power Engineering
http://www.windpowerengineering.com/maintenance/detecting-ice-on-wind-turbine-blades/

[7] *Wind Power And CO2 Emissions*

nightmare. One widely employed solution is the inclusion of heating elements in the windmill assembly. The heating element runs under the surfaces most vulnerable to ice buildup, heating that area to a temperature that prevents moisture from freezing to the surface. Heating elements are a proven technology that sees wide usage in homes and automobiles. The only problem with the application to windmills is that heating elements require electricity. Given the huge surface area on even the smallest of modern windmills, it has been determined in some studies that using electrical elements in "thermal anti-icing requires an amount of heater power equal to at least 25% of the turbine maximum rated power."[8] However, in conditions resulting in ice buildup, windmills can hardly expect to be operating anywhere near maximum rated power. Preventing ice from damaging the physical integrity of a windmill requires too great a sacrifice in operation time and power produced. It is unreasonable to expect people to rely on a wind-powered grid to keep them warm in the winter when the source of the power may be shut down at any point or is operating at less than 75 percent of expected capability.

To avoid sacrificing output and reliability, wind farms have turned to the solution that their counterparts in the aerospace industry have used to combat the same problem: tanker after tanker of de-icing fluid.

The active ingredients in deicing fluid are glycol-based agents. The two commonly used are propylene-glycol and ethylene-glycol. Propylene-glycol is more commonly used for one reason: it is less toxic than ethylene-glycol. This is where the problem with using these chemicals on windmills arises. These fluids are used because they have proved to be effective in the aerospace industry and their usage improves the reliability of the power grid. However, both chemicals are toxic; and despite the wider usage of propylene-glycol, ethylene-glycol is still available and used. Propylene-glycol, while minimally toxic to humans short of prolonged and excessive exposure, is suspected of creating severe damage to aquatic ecosystems. "Large, accidental releases into the environment… have the potential to rapidly deplete oxygen in confined surface waters. In such cases, oxygen depletion is due to the rapid degradation characteristics of both chemicals, which may cause localized fish kills and pose a threat to other aquatic life in the immediate area. Therefore, ethylene and propylene glycol should be kept out of rivers, lakes and

[8] *Wind Energy: Cold Weather Issues* Antoine Lacroix Dr. James F. Manwell, June 2000

streams where fish or other aquatic life may be found."[9] Ethylene-glycol, in particular, can cause severe nerve damage in humans and other animals and realistic exposure levels can be fatal. The dangers that these deicers pose has drawn action from the EPA, which promulgated in 2009 effluent standards for deicing fluids in use at airports. The proposed rule requires airports to employ storm water filter and recycling systems for catching the deicing fluid run off from the tarmac.[10] The established infrastructure of airport tarmacs and runways allows for easy mitigation of deicer pollution before it can reach the soil and groundwater. Many airports already take pre-cautions with deicing fluid despite the proposed EPA regulation. Wind farms are not constructed with any kind of infrastructure to take similar measures. The ground below windmills is grass and soil, not concrete and sewers.

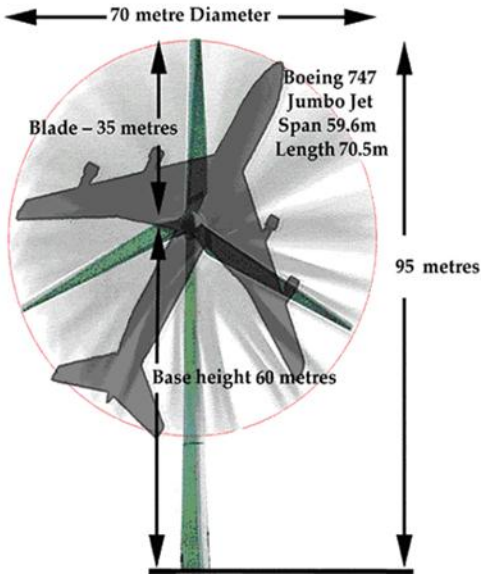
By the EPA's own admission, wind farm land is often used for "the grazing of cattle or farming." Wind farms that employ deicing fluid to ensure power reliability will be forced to spray barrel after barrel of toxic fluid over hundreds, maybe thousands of windmills over countless acres of land, allowing for food, soil and groundwater contamination. It seems illogical that the EPA wouldn't consider this necessary to mention in regards to "water resource" concerns.

[9] *DOW Glycol-based Fluids and the Environment,* DOW Chemicals
http://msdssearch.dow.com/PublishedLiteratureDOWCOM/dh_0031/0901b80380031ac4.pdf?filepath=/heattrans/pdfs/noreg/180-01403.pdf&fromPage=GetDoc

[10] *Proposed Effluent Guidelines for Airport Deicing - Airport Deicing Effluent Guidelines,* EPA August 2009
http://water.epa.gov/scitech/wastetech/guide/airport/deicing.cfm

Solid Waste Generation

The similarities between windmills and aircraft continue. Consider this diagram that demonstrates the sheer size of some of the larger windmills being constructed:



(Source: Everyday Citizen, How Big is an Industrial Wind Turbine? By J.P. Michaud, March 12, 2007)

Some of the larger blades can reach 115 feet (35 meters) in length, nearly the size of a Boeing 747's wing. Blade assemblies (the combination of all three blades) can weigh up to 36 tons, meaning each individual blade can weigh as much as 12 tons or 24,000 lbs.

Blades are primarily constructed out of composite material. Composites are extremely durable, lightweight and are incredibly versatile. Composites are effectively used in many industries with little waste; however, the infancy of the wind industry and the structural requirements of proper balancing and aerodynamics create a very high rejection rate of finished blades. In fact an industry insider has confirmed that as many as 20 percent of blades produced at many manufacturers do not meet requirements and have to be disposed. The composite material used in blades production contains some toxic chemicals and materials that are at risk of being released into the environment in disposal processes that break down the composites. The Annual Report on U.S. Wind Power Installation, Cost, and Performance Trends for the fiscal year 2008 shows that 9,092 new turbines were sold in the United States in 2007 alone, requiring the production of 27,276 blades assuming a 3 blade design. At a 20% failure rate for blades, 5,455 blades did not meet specifications and were disposed of. At 12 tons or 24,000 lbs. per blade, in 2007, 130,920,000 lbs. of solid waste from rejected wind blades would have been grinded up and sent to a land fill, releasing potentially millions of more pounds of toxins into the environment. The EPA has overlooked the incredible inefficiency of the windmill production industry in stating that wind power does not produce any substantial amount of solid waste when annual

disposal of over 100 million pounds of waste and climbing is occurring as a direct result of the wind industry. [11]

Bird and Bat Mortality

Many are aware of the problem that windmills pose for bird populations. Birds fly into windmills and strike the blades causing massive trauma to the animal which is almost always fatal. However most people forget that when the sun goes down bats take the skies and the recent surge in the number of wind facilities from coast to coast is wiping their populations out. In fact, bat carcasses have been found at nearly every wind facility in North America where adequate surveys for bats have been conducted.[12] Bats can be killed by striking the blades of the windmill; however, the majority of fatalities are caused by the reduced air pressure surrounding windmills. The rapid drop in pressure causes the lungs of bats to explode, killing them instantly. This creates a number of ecological concerns. Bats have a relatively slow reproductive cycle, which means that it is simply impossible for the animals to replenish their population when thousands are killed each year by this phenomenon. "By 2020, an estimated 33,000 to 111,000 bats are predicted to be killed by turbines in the mid-Atlantic Highlands alone."[13] This incredible drop in bat population will be accompanied by a spike in insect populations as bats are beneficial consumers of harmful insect pests.[14] A colony of a little over 100 bats can eat upwards of 1 million harmful insects a year.[15] The endangerment of bats creates a situation where insect borne diseases become more widespread along with the use of toxic pesticides. This is a clearly unacceptable scenario.

In response to these fatalities researches have proposed a solution. One study found that "shutting down the turbines during low wind periods can reduce fatalities by more than 90 percent."[16] The most viable solution researchers have devised requires the wind turbines to shut down and stop generating power. Since bats are nocturnal, this requires shutting down the facilities at night, but again wind mills usually generate the most energy at night. However the plan only calls for shutting down the turbines when "wind speeds are low",[17] not just at night. Bats will therefore still be at a tremendous risk, despite this "solution".

The EPA claims that "research on impacts to bats is now underway." The problem is that the impacts are known. Even other federal agencies, like the USGS (United States Geological

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[11] Assumes projected growth in wind power seen in EIA *Annual Energy Outlook 2011*

[12] *Bat Fatalities at Wind Turbines: Investigating the Causes and Consequences,* USGS http://www.fort.usgs.gov/batswindmills/

[13] *The Economic Cost of Losing Bats,* Bryan Walsh, TIME Ecocentric, March 31, 2011 http://ecocentric.blogs.time.com/2011/03/31/the-economic-cost-of-losing-bats/

[14] *Bat Fatalities at Wind Turbines: Investigating the Causes and Consequences*

[15] *The Economic Cost of Losing Bats*

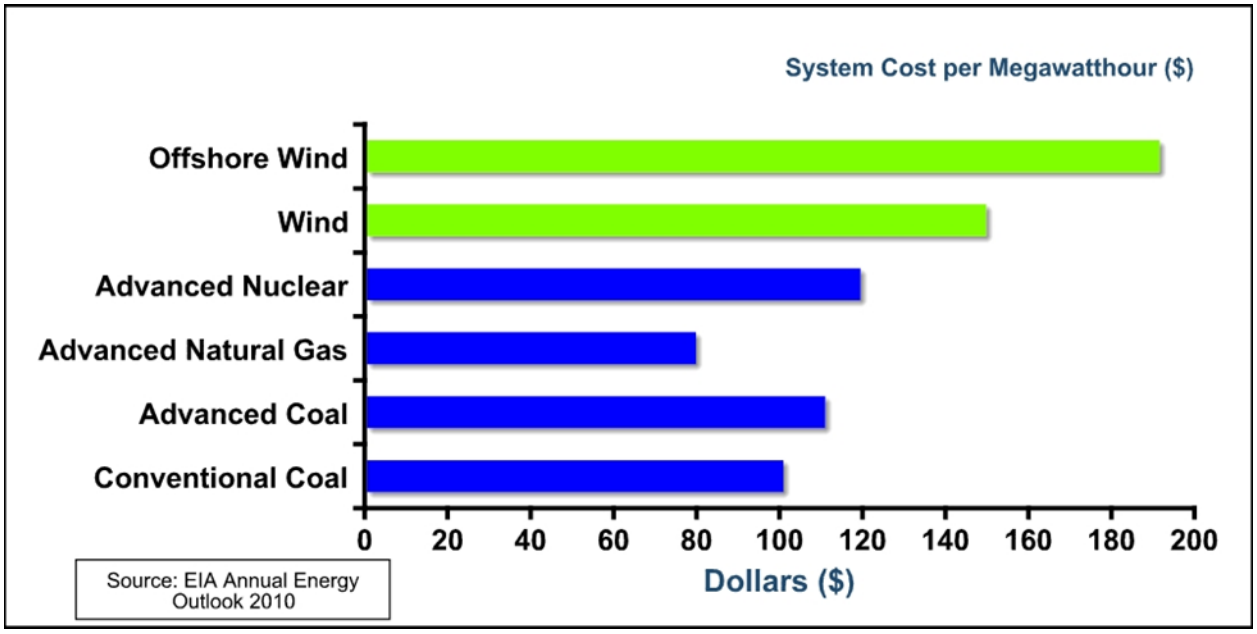
[16] [17] *Wind energy finds fix for exploding bats,* Washington Times March 23, 2009 http://www.washingtontimes.com/news/2009/mar/23/wind-turbine-advocates-test-a-solution-to-explodin/?page=1

Survey), have recognized the impact. Thousands of bats are dying each year and the ecosystem cannot sustain these losses. The consequences of rampant insect overpopulations are easily qualifiable as disastrous.

Cost and Capability

The environmentalist movement has declared a war on fossil fuel based energy because of the environmental consequences of burning various fuels. The EPA and others will point to renewable energy sources such as wind power as the alternative to fossil fuels and the key to sustainability. The EPA's own website is part of a campaign to convince Americans that the age old truth, that every action has consequences, is somehow not applicable to "green" energy. Robert Louis Stevenson once said, "Everybody, sooner or later, sits down to a banquet of consequences." Proponents of wind energy are no exception. Wind power yields as many, if not more, detriments to the environment than any other means of energy production, and anyone, including the EPA, who says otherwise is simply wrong. The only differentiating factor between wind energy and fossil fuels lies in efficiency.

Wind energy is not cost effective. In fact per a single unit of energy production, wind power is one of the most expensive means of energy production. Consider the following figure:



The higher cost should mean a higher quality end product. This is not the case. Projections show that even given a 72 percent increase in generation from renewable sources including wind by 2035, share of total generation will only grow by 3 percent. According to the 2011 Energy Information Administration's Annual Energy Outlook, wind alone will only produce roughly 150 billion kilowatthours in 2035, yet the United States will demand nearly 5 trillion kilowatthours that same year.

This meager growth in wind power is still only primarily driven by Federal tax credits, thus masking the true cost of wind energy production.

Conclusion

Wind energy is being sold to the American people as a consequence-free alternative to conventional energy while environmentalists and the EPA prepare and carry out an onslaught on fuels such as coal and natural gas. The truth is that wind energy is not clean. The nature of the industry requires those who produce and operate windmills to compromise the environment and ecosystem to compensate for an array of problems and short-comings.

In a simple cost benefit analysis between coal, natural gas, nuclear, other proven fuel sources and wind, Americans trade environmental hazards for different yet equally concerning issues. Yet, despite an equality of risks to the environment, if the United States trades proven energy production for an increasing dependence on wind, the country sacrifice energy reliability and exposes Americans even further to the unintended consequences of "green" energy.